

Listing of Claims:

1. (Currently Amended) An automated sales promotion selection system comprising:

an input device that receives customer data relating to purchases of items by customers;

a computer system including a central processing unit and a storage unit including a purchase advisor neural network and a plurality of item identifiers that identify items available for purchase, wherein the purchase advisor neural network responds to customer data received from the input device by determining if one or more of the item identifiers stored in the storage unit corresponds to an item likely to be purchased by one of the customers and identifies a sales promotion relating to the item, and wherein the central processing unit selectively adapts the response of the purchase advisor neural network for future customers in response to customer data; and

an output device that receives the item identifiers of the likely purchases determined by the purchase advisor neural network;

wherein the storage unit further includes a customer demographics neural network that estimates buying characteristics of one or more customers most likely to be at a purchase location, and also produces item identifiers comprising the estimated item purchases of the estimated customers.

2. (Original) The automated sales promotion selection system of claim 1, wherein the customer data received by the customer information device includes data relating to a purchase of one or more items that occurred during a current customer visit to a purchase location, and wherein the identified sales promotion comprises a list of items to be suggested for purchase during the current customer visit.

61 3. (Original) The automated sales promotion selection system of claim 1, wherein the central processing unit assigns the items purchased by the customer during the present customer visit into predetermined purchase classes comprising items frequently purchased together, wherein the purchase advisor neural network determines an item likely to be purchased by receiving the purchase class assignments from the central processing unit and identifying as likely to be purchased those items that are members of a purchase class observed to be in a purchase by the customer but are missing from the items purchased, and wherein the identified sales promotion comprises a listing of at least one of the items determined to be missing from one of the purchase classes to be suggested to the customer for purchase during the current customer visit.

4. (Original) The automated sales promotion selection system of claim 3, wherein the central processing unit selectively adapts the response of the purchase advisor neural network by updating at least one predetermined purchase class based upon purchase data from previous customer transactions.

5. (Canceled).

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p. (Currently Amended) The automated sales promotion selection system of claim 5 1, wherein the central processing unit receives the item identifiers of the estimated purchases from the customer demographics neural network, segments the item identifiers into purchase classes, and provides the purchase advisor neural network with the segmented item identifiers as input; and wherein the purchase advisor neural network responds to the input by determining if one or more of the item identifiers corresponds to an item likely to be purchased by one of the estimated customers.

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7. (Original) The automated sales promotion selection system of claim 1, wherein the storage unit further includes a neural network training subsystem that collects a set of sales purchase data generated by customer purchases, selects a training epoch subset of the collected sales purchase data, and performs a neural network training process with the selected data, and wherein the neural network training subsystem further repeatedly collects data, selects a training subset, and performs the training process until all neural network training epoch data subsets in the collected sales purchase data have been processed.

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8. (Original) The automated sales promotion selection system of claim 1, wherein the central processing unit selectively adapts the response of the purchase advisor neural network by retraining the purchase advisor neural network with purchase data from previous customer transactions.

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9. (Currently Amended) An apparatus comprising:  
a storage unit;  
a central processing unit configured to receive customer data relating to a current customer; and  
a purchase advisor neural network stored in the storage unit and configured to respond to the customer data received by the central processing unit and identify a sales promotion for the current customer, wherein the response of the purchase advisor neural network for future customers is selectively adaptable by the central processing unit in response to customer data; and  
a plurality of item identifiers stored in the storage unit, the item identifiers identifying items available for purchase, wherein the customer data includes data relating to purchases of items by the customer, and wherein the purchase advisor neural network is configured to identify the sales promotion by determining if one

or more of the item identifiers stored in the storage unit corresponds to an item likely to be purchased by the customer;

wherein the storage unit further includes a customer demographics neural network that estimates buying characteristics of one or more customers most likely to be at a purchase location, and also produces item identifiers comprising the estimated item purchases of the estimated customers.

10. (Canceled).

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11. (Currently Amended) The apparatus of claim 10, wherein the customer data includes data relating to a purchase of one or more items that occurred during a current customer visit to a purchase location, wherein the identified sales promotion comprises a list of items to be suggested for purchase during the current customer visit, wherein the central processing unit assigns the items purchased by the customer during the present customer visit into predetermined purchase classes comprising items frequently purchased together, wherein the purchase advisor neural network determines an item likely to be purchased by receiving the purchase class assignments from the central processing unit and identifying as likely to be purchased those items that are members of a purchase class observed to be in a purchase by the customer but are missing from the items purchased, and wherein the identified sales promotion comprises a listing of at least one of the items determined to be missing from one of the purchase classes to be suggested to the customer for purchase during the current customer visit.

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12. (Original) The apparatus of claim 11, wherein the central processing unit selectively adapts the response of the purchase advisor neural network by updating at least one predetermined purchase class based upon purchase data from previous customer transactions.

13. (Canceled).

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14. (Currently Amended) The apparatus of claim 13, wherein the central processing unit receives the item identifiers of the estimated purchases from the customer demographics neural network, segments the item identifiers into purchase classes, and provides the purchase advisor neural network with the segmented item identifiers as input; and wherein the purchase advisor neural network responds to the input by determining if one or more of the item identifiers corresponds to an item likely to be purchased by one of the estimated customers.

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15. (Currently Amended) The apparatus of claim 14, wherein the storage unit further includes a neural network training subsystem that collects a set of sales purchase data generated by customer purchases, selects a training epoch subset of the collected sales purchase data, and performs a neural network training process with the selected data, and wherein the neural network training subsystem further repeatedly collects data, selects a training subset, and performs the training process until all neural network training epoch data subsets in the collected sales purchase data have been processed.

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16. (Original) The apparatus of claim 15, wherein the central processing unit selectively adapts the response of the purchase advisor neural network by retraining the purchase advisor neural network with purchase data from previous customer transactions.

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17. (Currently Amended) A method of dynamically identifying sales opportunities for purchases of items by customers from an inventory of items, the method comprising:  
training a purchase advisor neural network that generates an output set of item identifiers comprising sales opportunities for purchases of the items;  
providing the trained purchase advisor neural network with customer data;

generating a sales opportunity output for a current customer with the trained purchase advisor neural network in response to the customer data, the output including one or more item identifiers that identify items in the inventory; selecting a set of item identifiers from among the sales opportunity output generated by the purchase advisor neural network as potential purchases from the inventory of items; and

selectively adapting the response of the purchase advisor neural network for future customers in response to customer data;

wherein selecting item identifiers of potential purchases for the customer comprises:

estimating buying characteristics of one or more customers most likely to be at a purchase location; and

estimating item identifiers of items most likely to be purchased by the estimated customers.

<sup>15</sup>  
~~18.~~ (Original) The method of claim <sup>14</sup>~~17~~, wherein providing customer data comprises providing the purchase advisor neural network with data that relates to a purchase of one or more items by a customer that occurred during a present visit by the customer to a purchase location.

<sup>16</sup>  
~~19.~~ (Canceled).

<sup>16</sup>  
~~20.~~ (Original) The method of claim <sup>14</sup>~~17~~, wherein training the purchase advisor neural network comprises:

collecting a set of sales purchase data for a plurality of customers;  
selecting a training epoch subset of the collected sales purchase data;  
performing a neural network training process with the selected data in which network coefficients are modified; and

repeating the selection of training epoch subsets and the performance of the neural network training process until all neural network training epoch data subsets in the collected sales purchase data have been processed.

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~~21.~~ (Currently Amended) ~~The method of claim 17;~~ A method of dynamically identifying sales opportunities for purchases of items by customers from an inventory of items, the method comprising:

training a purchase advisor neural network that generates an output set of item identifiers comprising sales opportunities for purchases of the items;

providing the trained purchase advisor neural network with customer data;

generating a sales opportunity output for a current customer with the trained purchase advisor neural network in response to the customer data, the output including one or more item identifiers that identify items in the inventory;

selecting a set of item identifiers from among the sales opportunity output generated by the purchase advisor neural network as potential purchases from the inventory of items; and

selectively adapting the response of the purchase advisor neural network for future customers in response to customer data;

wherein providing customer data comprises:

training a demographics neural network that generates an output set of data defining predicted purchases of customers during a purchasing transaction;

providing the trained demographics neural network with prediction data comprising the current date, current time of day, and environmental information; and

generating with the demographics neural network predicted customer purchases.

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22. (Original) The method of claim 17, wherein selectively adapting the response of the purchase advisor neural network includes retraining the purchase advisor neural network with purchase data from previous customer transactions.

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23. (Currently Amended) A method of dynamically identifying a sales opportunity for a customer, the method comprising:

receiving customer data relating to a current customer;

generating with a purchase advisor neural network a sales opportunity output for the current customer in response to the customer data; and

selectively adapting the response of the purchase advisor neural network for future customers in response to customer data from previous customer transactions;

providing a demographics neural network with prediction data comprising the current date, current time of day, and environmental information; and

generating with the demographics neural network an output set of data defining predicted purchases of customers during a purchasing transaction based upon the prediction data.

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24. (Original) The method of claim 23, wherein the customer data includes data relating to a selection of one or more items by a customer that occurred during a present visit by the customer to a purchase location, and wherein the sales opportunity output includes one or more item identifiers that identify additional items in the inventory.

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25. (Original) The method of claim 23, wherein selectively adapting the response of the purchase advisor neural network includes retraining the purchase advisor neural network with purchase data from previous customer transactions.



26-39. (Canceled).

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